Development of a concept to combine and simplify different existing automatic test systems and subsequent implementation of a new test system software

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Open-Minded

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Outline

- Motivation
- Original State
- Analysis
- Implementation
- Outlook

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Motivation

Identify

Redundancies

Motivation

Create

Concept

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Motivation

Increase

Efficiency

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Original State

Development

Design adjustment

PV

Hardware design

Developer

Feedback

Analysis Tester

Production

Surface Mode Assembly

Optical Inspection → Panelflasher → HF Alignment

Final Assembly

Repair

Final Tester ↔ ECT Tester

sampled

Repair Tester

Label Printer

Bulk Tester

Defect

Customer

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DUT

PV

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Windows **PC**	**Power Supply** Xantrex XKW33	**BT-Tester** Anritsu MT8852B
Nokia Carbox	**Multimeter** Keithley 2015P	**Radio Comm. Tester** Rohde&Schwarz CMU200
Climatic Chamber	**Switch Unit** IMTOP Power	**Switch Unit** RF-Switch
	Switch Unit Agilent 34970A	**Switch Unit** Agilent 34970A
	Switch Unit Agilent 34970A	**Switch Unit** Agilent 34970A
	Switch Unit Agilent 34970A	

PV

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Alignment

Windows **PC**	**Power Supply** Keithley 2306	**RF Analyzer** Agilent E4406A
Test Box	**Power Supply** Agilent 6632B	**RF Generator** Agilent E4421B
	Multimeter Keithley 2015P	

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Final

Windows PC	Power Supply Agilent 6632B	BT-Tester Anritsu MT8852B
TBSU	Power Supply Agilent 6632B	Radio Comm. Tester Rohde&Schwarz CMU200
Test Box	Multimeter Keithley 2015P	Switch Unit Custom Relay Card
	Switch Unit RF-Switch	

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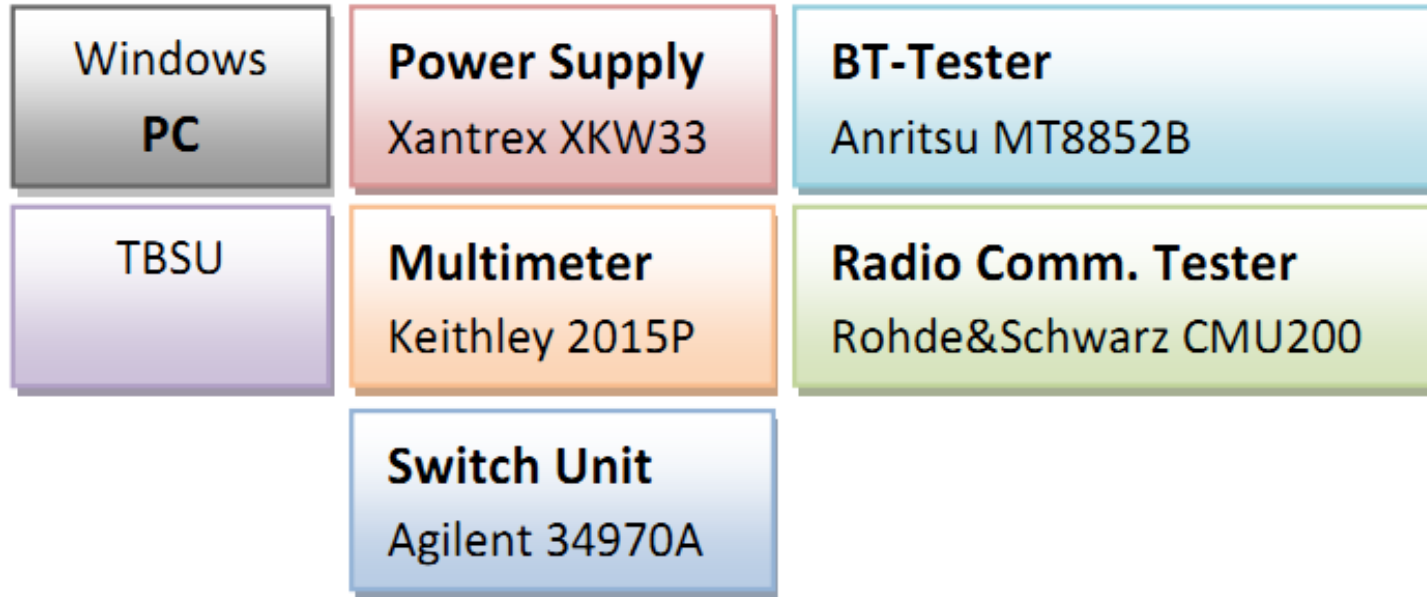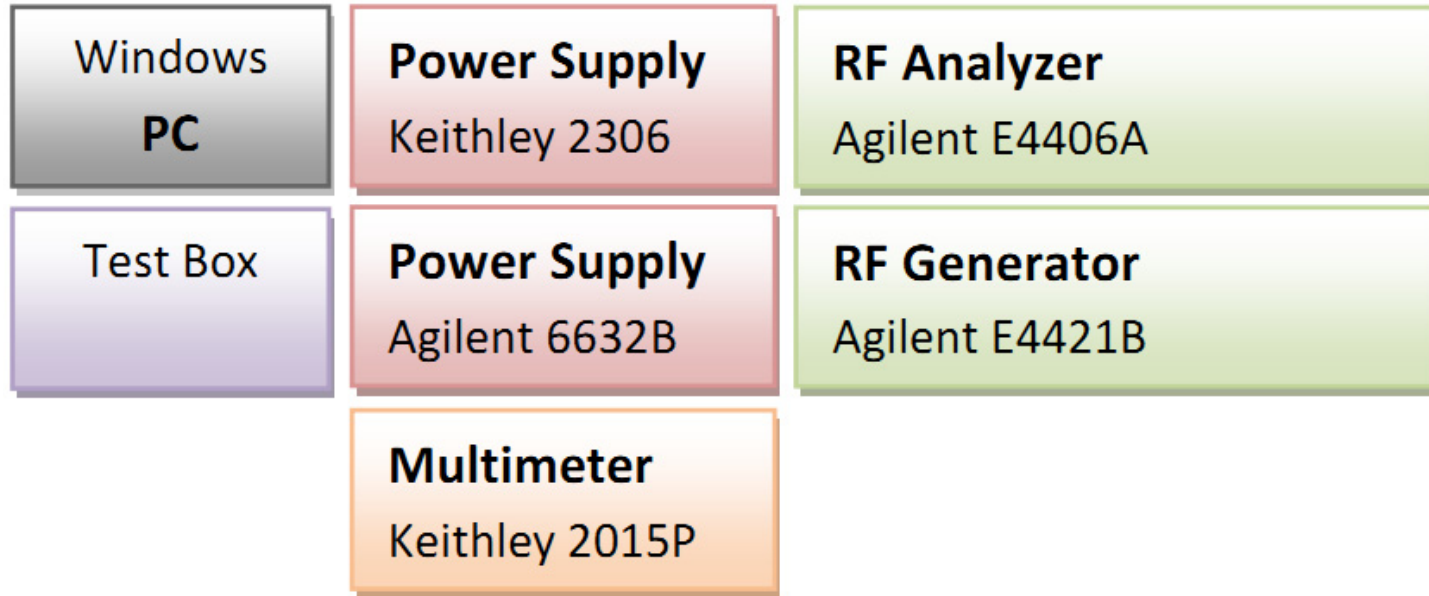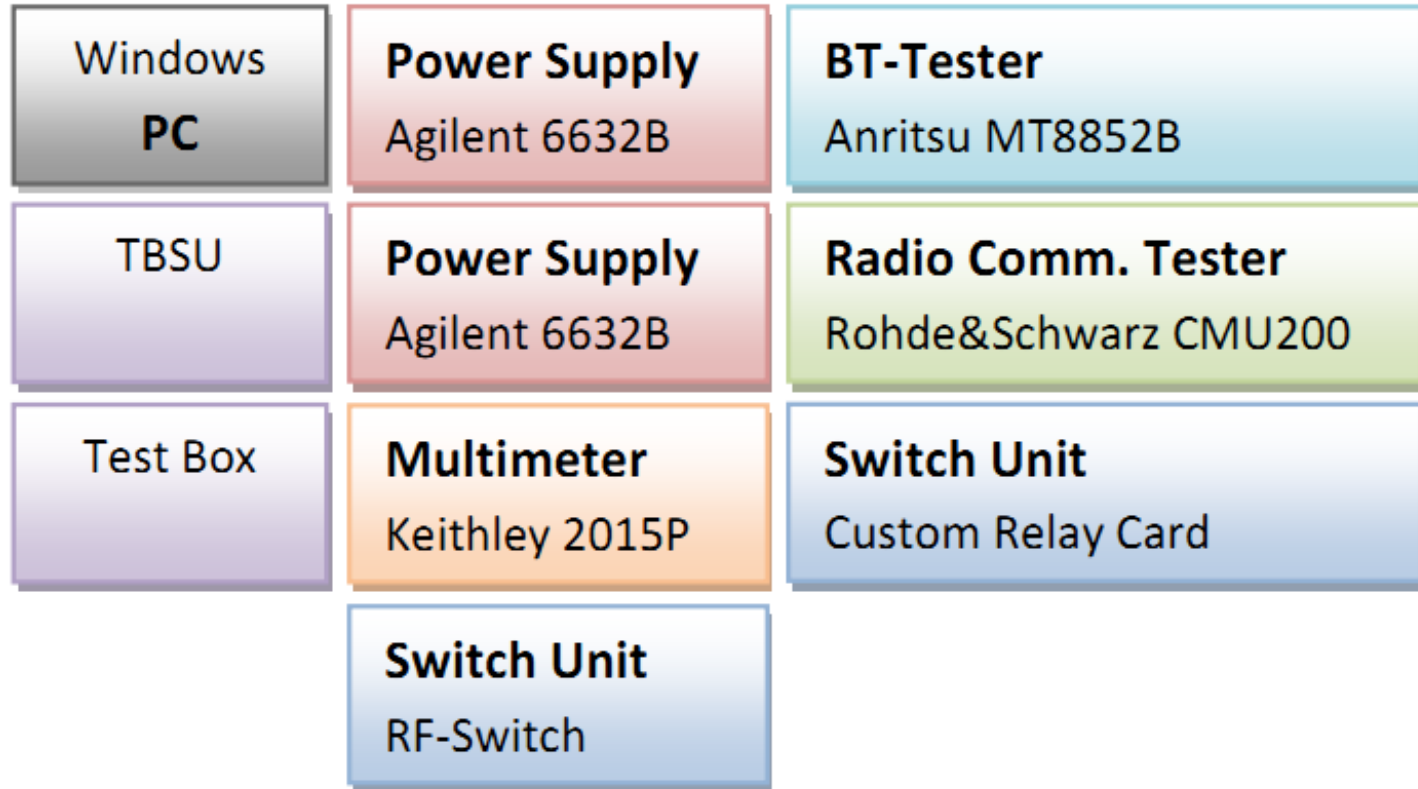
Windows **PC**	**Power Supply** Agilent 6632B	**BT-Tester** Anritsu MT8852B
TBSU	**Power Supply** Agilent 6632B	**Radio Comm. Tester** Rohde&Schwarz CMU200
Climatic Chamber	**Multimeter** Keithley 2015P	**Switch Unit** Custom Relay Card
	Switch Unit RF-Switch	

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Label 1

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Windows
PC

Barcode
Scanner

Bulk

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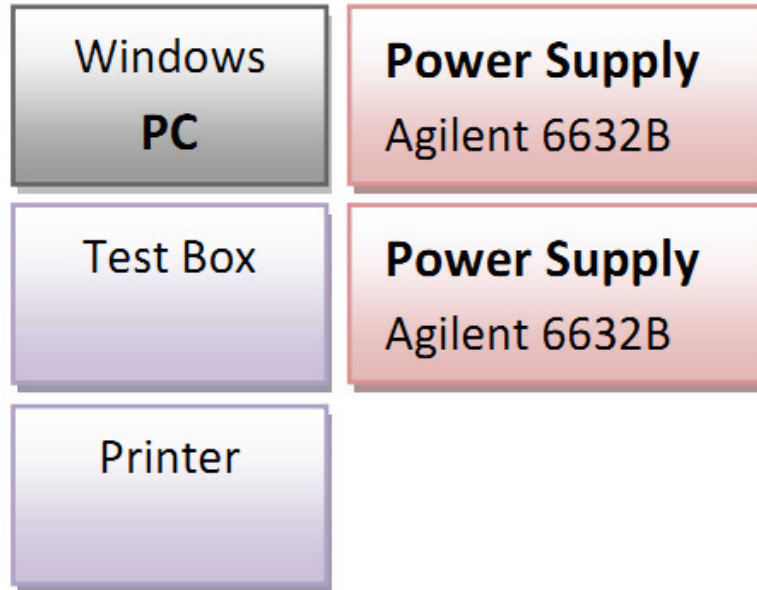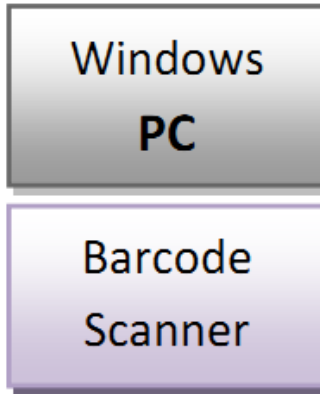
HW-Combinations

	ECT	Final	PV	Analysis
PS	X	X	X	X
DMM	X	X	X	X
CC	X		X	
SU	X	X	X	X
CMU	X	X	X	X
BT	X	X	X	X
Printer				
Carbox/TBSU	X	X	X	X
Barcode				

Test-Combinations

Final	ECT	PV	Analysis
100%	90%	87%	78%

TestZtand
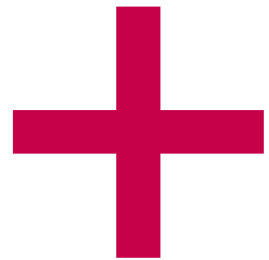
+ Established

− Cost & Complexity

Vee

+ Graphical

− Cost & Complexity

novero Tester

+ C++ & free!

– Implement. Effort

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Recap

combine ECT, PV, Final

usin novero Tester
g
impleme PV
nt

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Driver Framework

Driver Framework

Connect GPIB 9 → **Query „*IDN?"**

Which Device?

Device X → **Connect Device X**

Device Y → **Connect Device Y**

Sample

GPIB Address from .ini

Connect Device

Log Resul
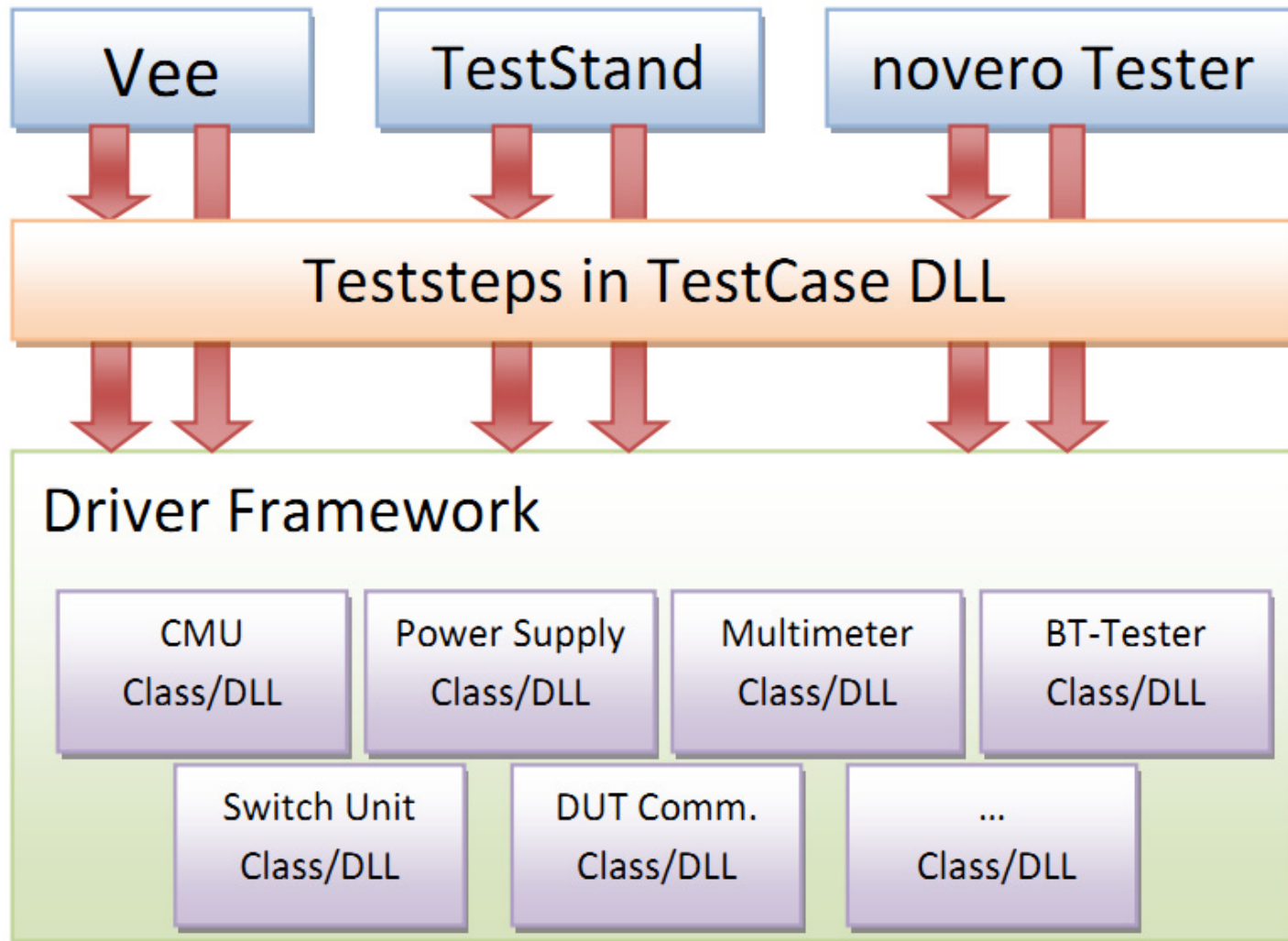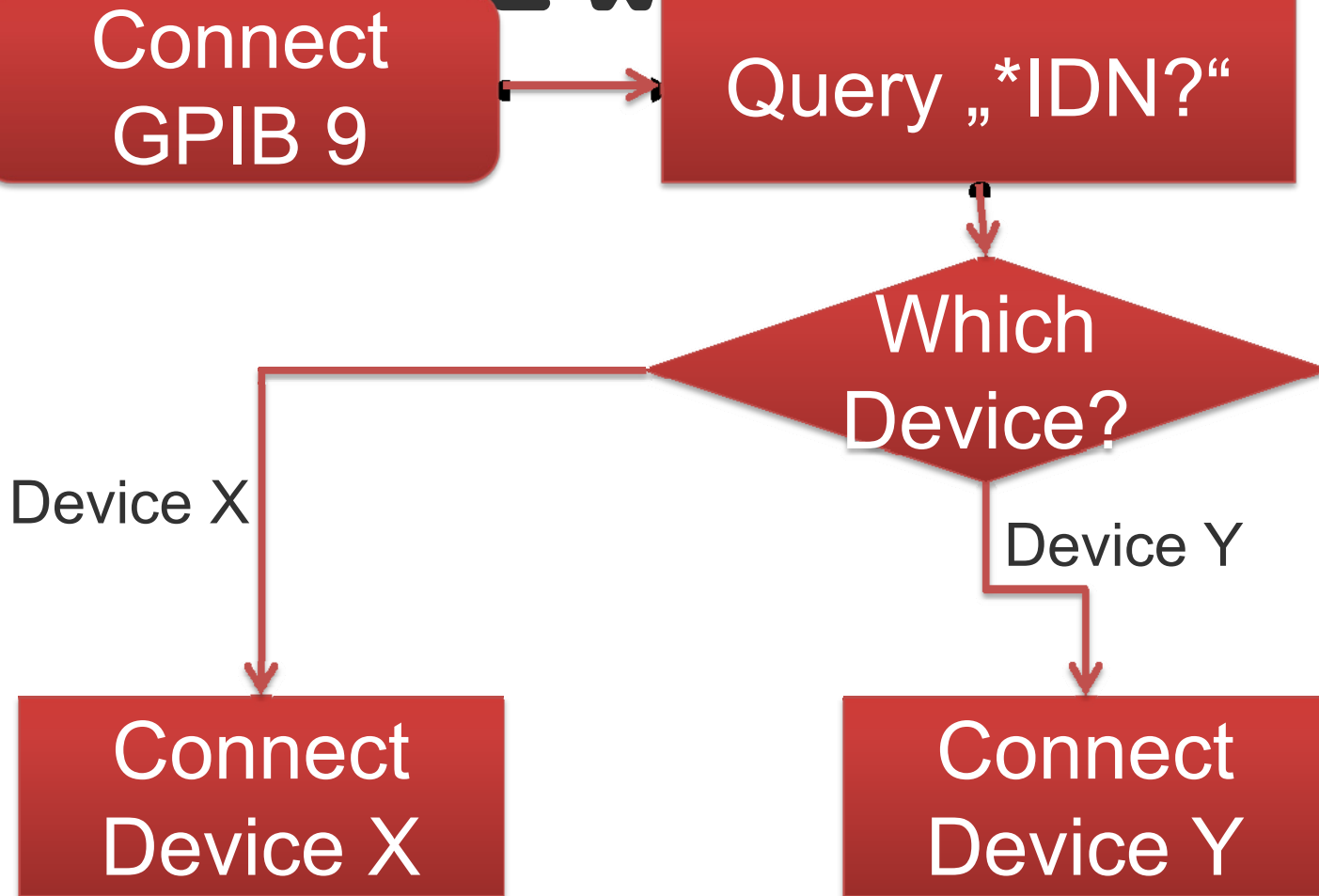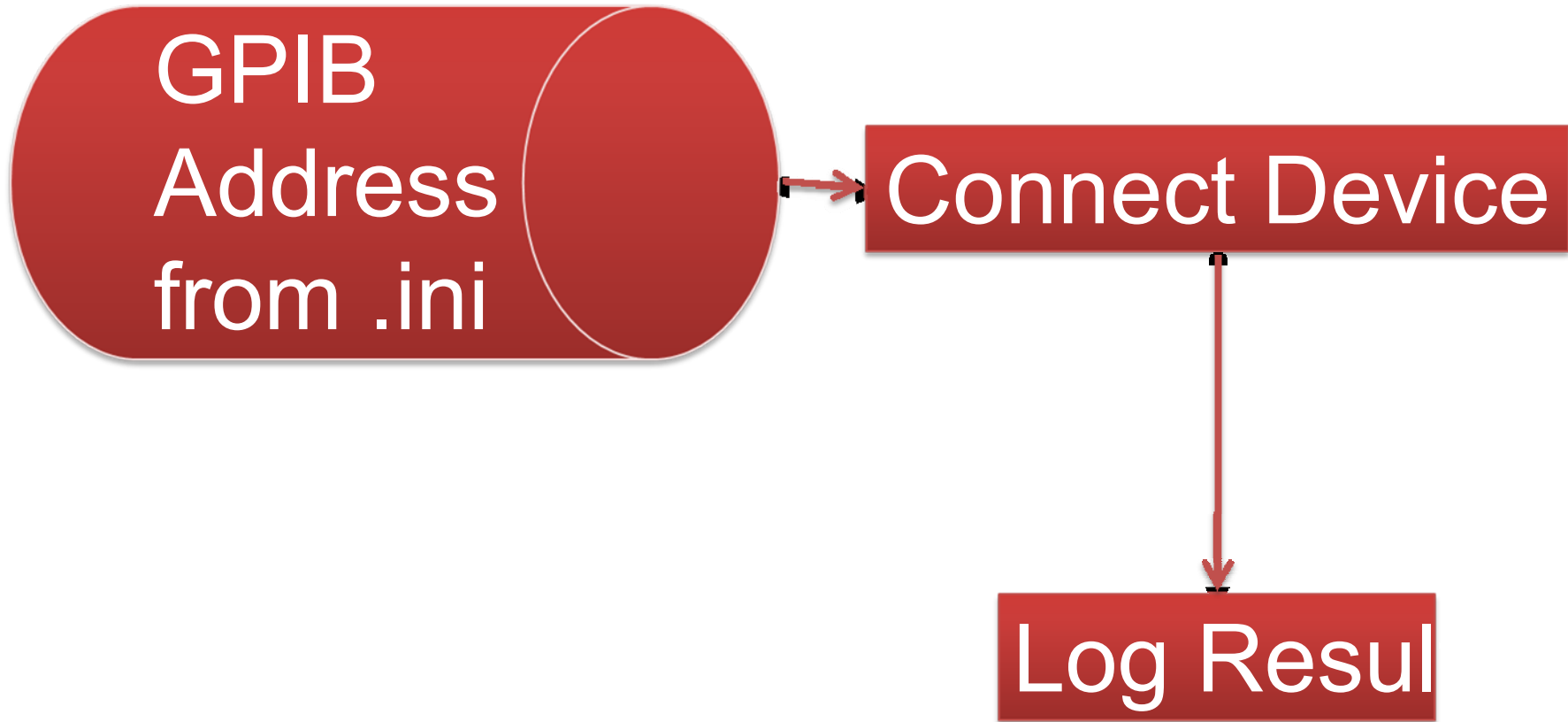
Sample

```
ACTION (
    „Connect to Power Supply",
    PowerSupply->
     Connect (
       Config->
         GetIntVal(
           „GPIB","PowerSupply",0)
       )
    );
```

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Sample

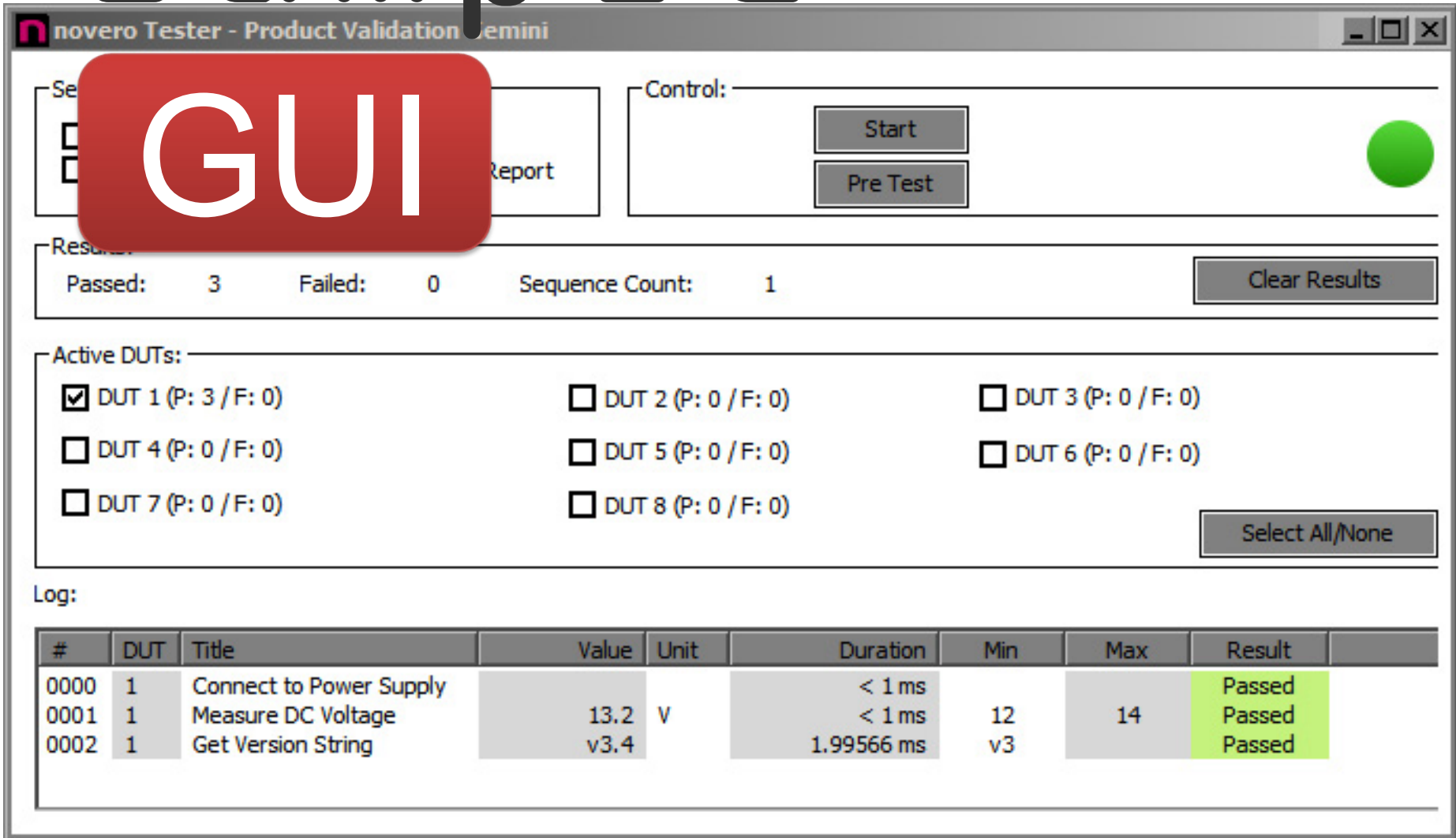```
NUMERIC (
    „Measure DC Voltage",
    DMM->
        MeasureVoltDC (
            &g_doubleResult
)
    ,"V",12.0,14.0);
```

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# Sample

```
STRING (
    „Get Version String",
    PXA->
        GetVersionString (
            &g_stringResult
        )
    ,"v3");
```

Sample

HTML

Product Validation Gemini - Report

	3
Tests passed:	**3** **(100.00% of executed test cases)**
Tests failed:	**0** (0.00% of executed test cases)

novero Tester Report   02.11.2011 - 11:47:47

Tests

DUT			Title	Comment	Result
000	1	11:47:52	Connect to Power Supply		Passed
001	1	11:47:52	Measure DC Voltage	(12 [V] <=) 13.2 [V] (<= 14 [V])	Passed
002	1	11:47:52	Get Version String	("v3" in) "v3.4"	Passed

Sample

DVLOG

```
[tes
#<!--TestCasesStart-->#
Connect to Power Supply;;;;;
Measure DC Voltage;V;12;14;;
Get Version String;;v3;;;
#<!--TestCasesEnd-->#

[testresult_header]
line_number;date;time;cycle;dut;temperature;
humidity;testname;verdict;meas_result;meas_unit;additional_info
[testresults]
0;02.11.2011;11:47:52;1;1;-;-;Connect to Power Supply;PASS;;;;
1;02.11.2011;11:47:52;1;1;-;-;Measure DC Voltage;PASS;13.2;V;;
2;02.11.2011;11:47:52;1;1;-;-;Get Version String;PASS;v3.4;;;
```

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Results

Driver
Framework
working

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Results

PV Tester implemented

Results

Teststeps

portable

Future

Use

Teststeps for other stations

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Future

Add Teststeps for other stations

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Future

Replace existing SW solutions

Questions?

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thanks!

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